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(51) INT CL<sup>6</sup>  
**F16K 5/10**

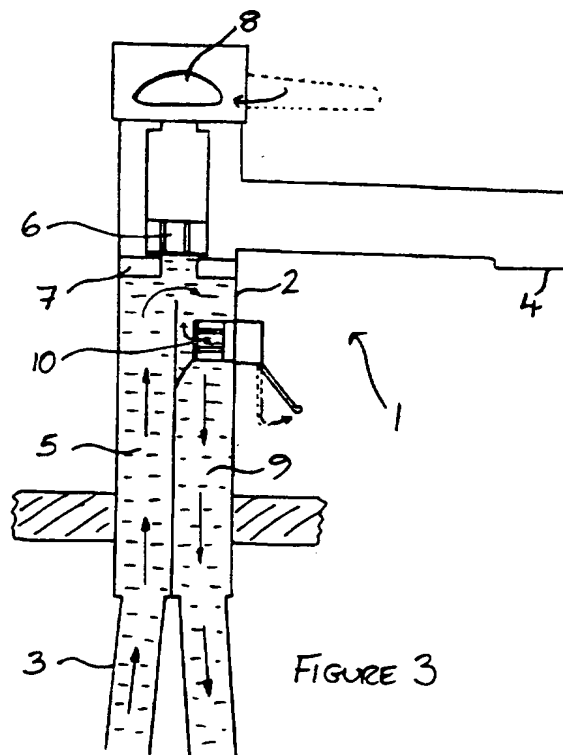
(52) UK CL (Edition O )  
**E1X XK7K**

(56) Documents Cited  
**None**

(58) Field of Search  
UK CL (Edition O ) **E1X XK7K , F2V VA4 VV4**  
INT CL<sup>6</sup> **F16K 5/10**  
**Online database: WPI**

(54) Tap

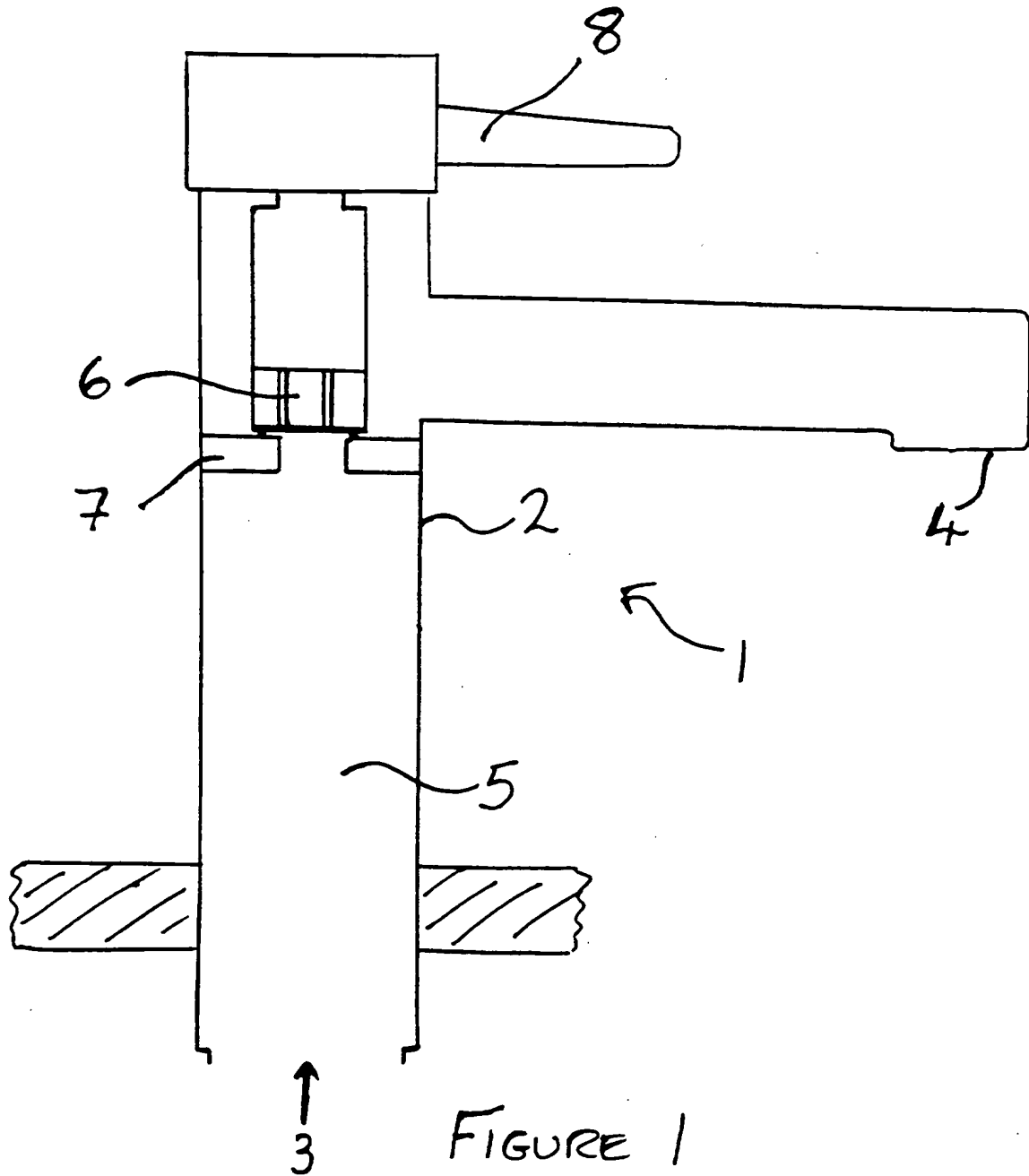
(57) A tap 1 comprises a body 2 having an inlet or primary fluid passage 5 and an outlet 4 interconnected via a tap valve 6 and tap valve seat 7 and is characterised by the provision of a secondary fluid passage 9 and with an auxiliary valve 10 located in the secondary fluid passage; the secondary fluid passage communicating with the primary fluid passage 5 at a juncture sufficiently close to the tap valve seat 7 that a significant proportion of the fluid flowing under pressure to the opened tap will, when the auxiliary valve is opened, tend to be drawn into the secondary passage and through the auxiliary valve and then either to drain or to a storage facility other than the tap itself.



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The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1995

(1/5)



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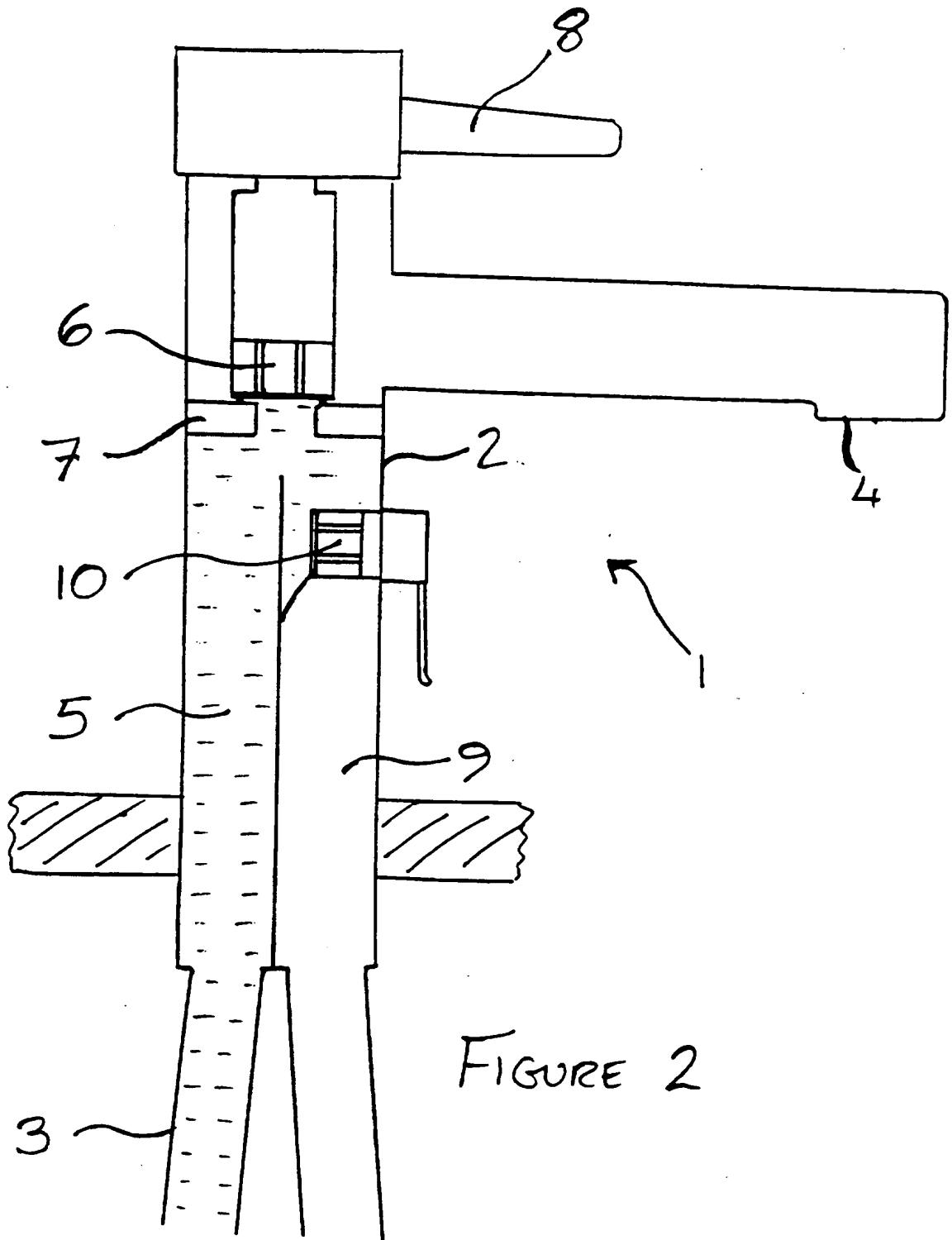


FIGURE 2

(3/5)

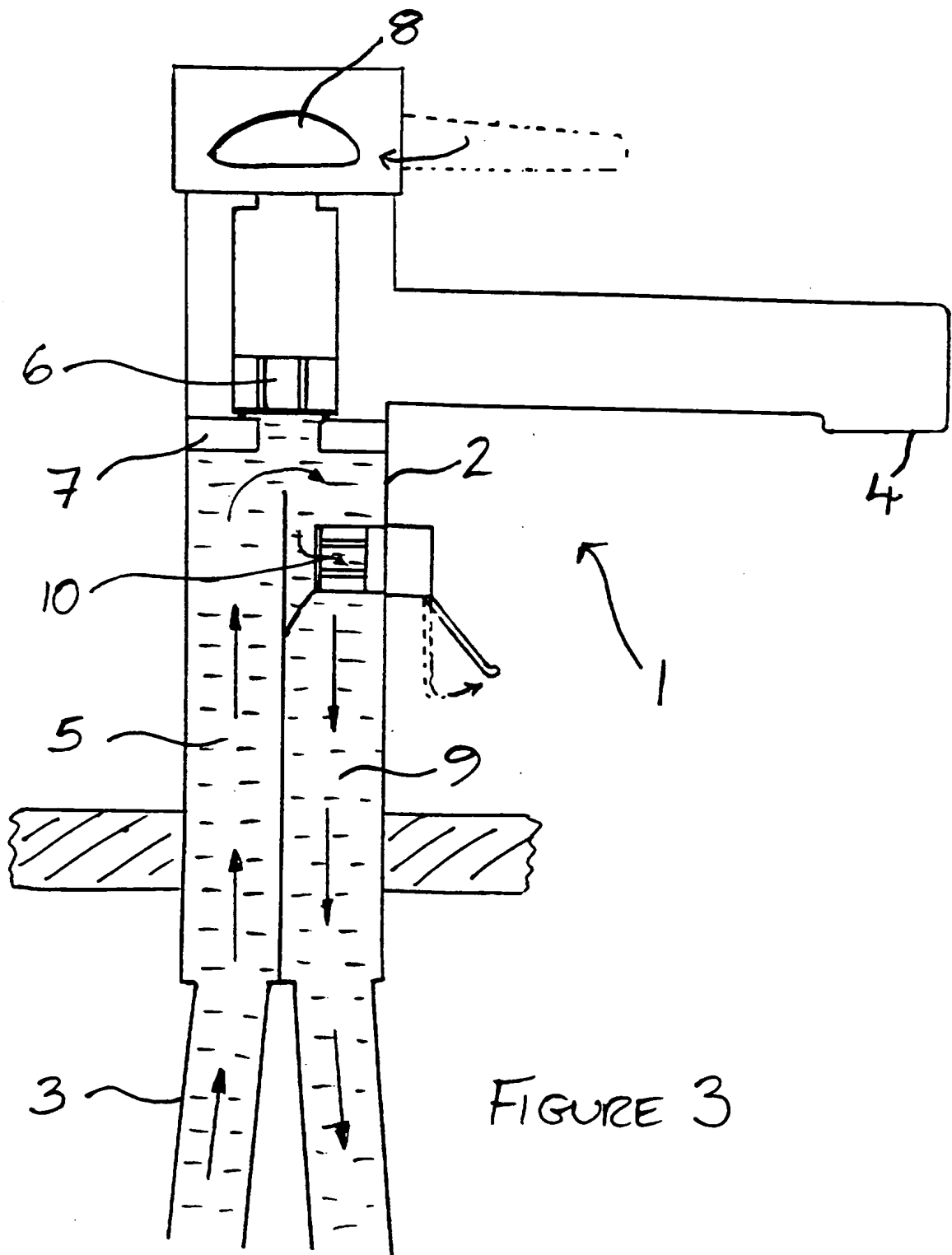
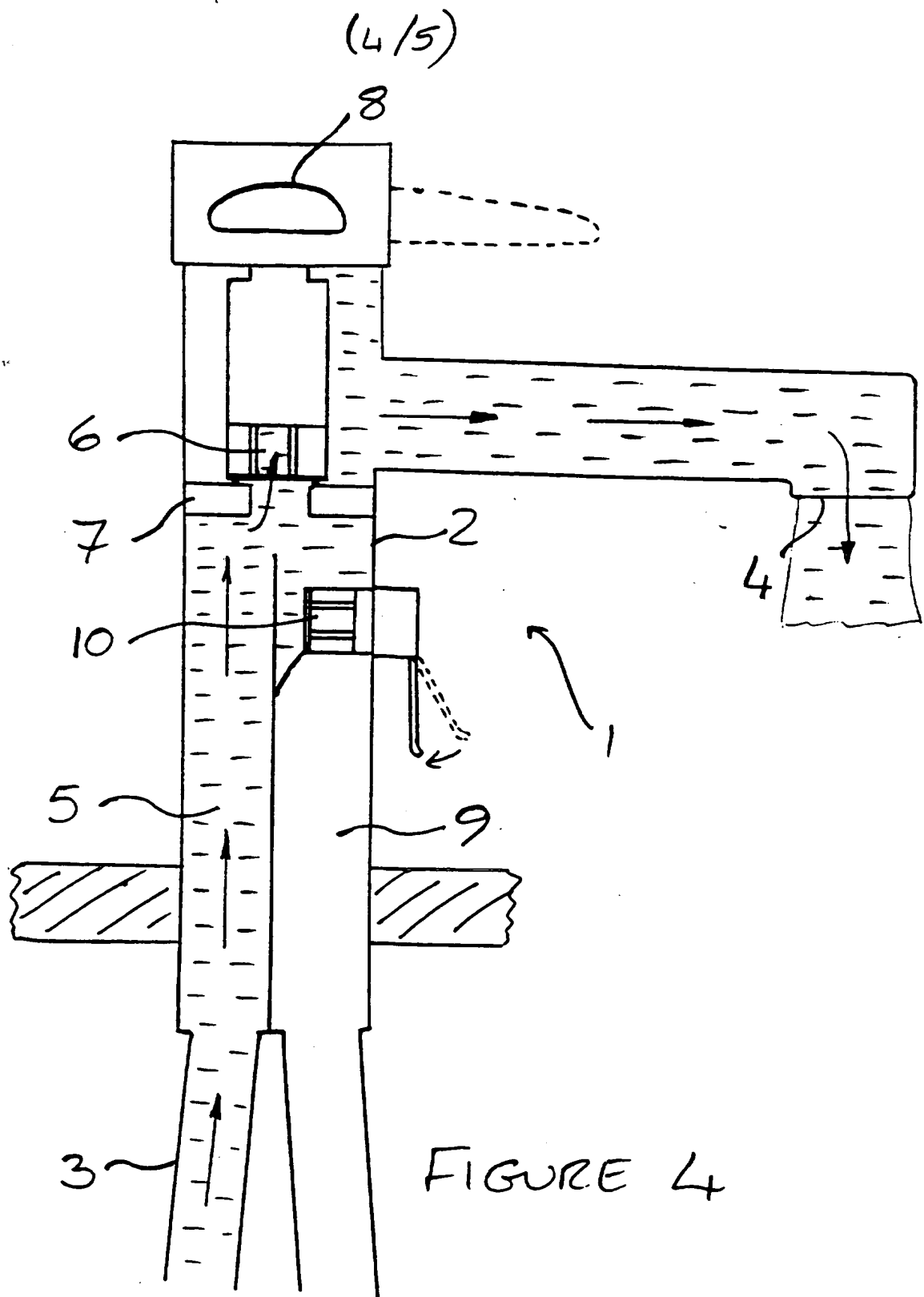


FIGURE 3



(5/5)

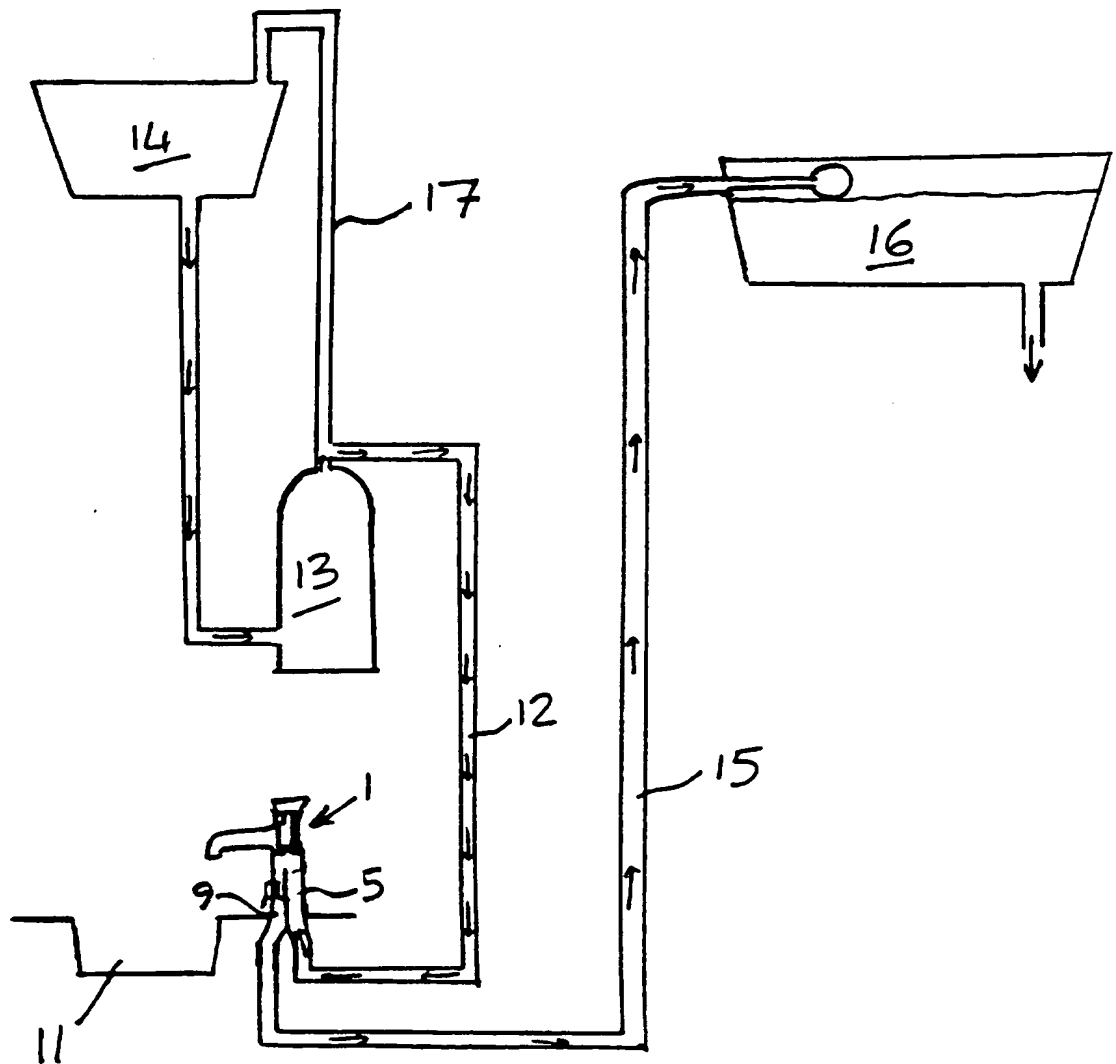


FIGURE 5

**TAP****Field of the Invention**

This invention relates to the field of taps, in particular but not exclusively for the supply of hot water.

**5      Background to the Invention**

Domestic hot water is generally supplied from a hot water tank or boiler remote from the individual hot water taps throughout the building. This results in the well-known situation of having to let the tap "run" for a period of time whilst the hot water makes its way to the tap. The user turns on the  
10      tap causing initially-cold water to be supplied. The supplied water then gradually heats to a temperature sufficient for use.

The initially-cold or warming water normally drains away as the user waits for the water to heat up to the desired temperature and, since this wastage is repeated each time a hot water tap is turned on, the cumulative waste over a  
15      period of time can be significant.

There is thus a need for a means of reducing the quantity of water wasted each time a hot tap is turned on.

**Summary of the Invention**

5 According to a first aspect of the present invention, there is provided a tap for the supply of hot water, of a kind known *per se*, characterised by the provision of a secondary fluid passage and with an auxiliary valve located in the secondary fluid passage; the secondary fluid passage communicating with the primary fluid passage at a juncture sufficiently close to the tap valve seat that a significant proportion of the fluid flowing under pressure to the opened tap will, when the auxiliary valve is opened, tend to be drawn into the secondary passage and through the auxiliary valve and thence either to drain or to a storage facility other than the tap itself.

10 In a preferred form, said auxiliary valve is selectively manually actuable.

In a further preferred form, said auxiliary valve is automatically actuable in response to the output of a temperature-sensing device.

15 It will be appreciated that the invention includes within its scope a tap for the supply of hot water substantially as described herein with reference to and as illustrated by any appropriate combination of Figures 2 to 5.

According to a second aspect of the invention, there is provided a water supply and/or storage system including one or more taps substantially as described above.

#### Brief Description of the Drawings

20 In the drawings:

Figure 1 is a schematic view of a conventional tap;

Figure 2 shows a tap embodying the present invention in its "OFF" position;

Figure 3 shows the tap of Figure 2 in its "ON" position with the auxiliary valve open;



Figure 4 shows the tap of Figure 2 in its "ON" position with the auxiliary valve closed; and

Figure 5 is a schematic representation of a water supply and/or storage system including one or more of the taps of Figure 2.

5      Description of the Preferred Embodiments

Referring to Figure 1, tap 1 comprises a body 2 having an inlet 3 and outlet 4. The inlet 3 and outlet 4 are interconnected by primary passage 5.

10      Intermediate inlet 3 and outlet 4 is tap valve 6 and tap valve seat 7. In both a conventional tap and the tap of the present invention (described below), tap valve 6 is opened and closed by means of actuating means 8 so as to permit passage of fluid between inlet 3, via primary passage 5 to outlet 4.

15      Conventionally, when tap valve 6 is opened by actuating means 8, water enters the tap via inlet 3, passes through the primary passage 5, the tap valve 6 and exits the tap at outlet 4. It is necessary to let the tap "run" for some time before hot water is drawn into inlet 3 from remote parts of the domestic water system.

20      Turning now to Figure 2, the tap 1 of the present invention further comprises a secondary passage 9 communicating with and as substantially parallel to primary passage 5. Auxiliary valve 10 is located in secondary fluid passage 9. Secondary passage 9 is intended to provide a route by which water can exit tap 1 additionally (or preferably alternatively) to outlet 4; the selected exit route depending upon the status of tap valve 6 and auxiliary valve 10.

25      Figure 2 shows the tap in its "OFF" position ie. with tap valve 6 sealingly engaging tap valve seat 7 so as to prevent flow of water through tap 1. Auxiliary valve 10 is also closed to prevent flow of water through secondary passage 9. This is the normal, not-in-use status of tap 1.

When a user requires hot water, he/she turns on tap 1 using actuating means 8. This causes tap valve 6 to open. Water, under pressure, enters tap 1 through inlet 3; this water normally being initially-cold.

5 In order to conserve this initially-cold water which would otherwise be wasted, auxiliary valve 10 is opened as shown in Figure 3 so as to permit a significant proportion of the incoming water to exit tap 1 via secondary passage 9 rather than outlet 4. This water passes down secondary passage 9, leaving the tap from where it can be stored for future use.

10 During this operation, the incoming water is gradually heating and eventually the desired temperature is reached. At this point, auxiliary valve 10 is closed as shown in Figure 4. This allows the (now hot) water to exit tap 1 normally via outlet 4.

15 The illustrated embodiment shows a manually actuatable auxiliary valve 10 which the user is able to open and close at will, depending upon the desired temperature of the water. Care must be taken to ensure that auxiliary valve 10 is closed whenever tap valve 6 is closed; alternatively, an automatic cut-off facility (not shown) could be incorporated to automatically close auxiliary valve 10 whenever tap valve 6 closes.

20 In a further automated embodiment (not shown) auxiliary valve 10 may be controlled automatically by means of a thermostatically-controlled automatic actuating means. The automatic actuating means would be provided with a selectable pre-defined temperature setting so that when incoming water reaches that pre-defined temperature, auxiliary valve 10 is automatically closed allowing water of the desired temperature to flow from outlet 4.

25 The water saved through use of the above-described tap can be put to a number of uses. Figure 5 is a schematic representation of part of a domestic water supply and storage system which illustrates the storage of saved water for such a use.

5 Kitchen sink 11 (for example) is provided with tap 1, as described above. Hot water is supplied to primary passage 5 via hot water pipe 12 from hot water cylinder 13. Pipe 17 is a vent pipe. When tap 1 is initially turned on, the "dead leg" (water remaining in pipe 12 which has, over a period of time, gone cold) water must flow through tap 1 before any warm or hot water from hot water cylinder 13 reaches the primary passage 5.

Tap 1 operates as described above. The initially-supplied water (which has not yet reached the desired temperature) is diverted through secondary passage 9 away from tap 1 via pipe 15.

10 Pipe 15 directs the water into collection tank 16. Many potential uses for this stored water are envisaged, for example, use in flushing a toilet cistern, feeding back into the main cold water tank, for future use, supply to an external tap for hosepipe use etc.

15 Although a kitchen sink tap is given as an example here, the tap of the present invention is suitable for use in place of any conventional hot water tap, for example in sinks, baths, shower mixers etc.

CLAIMS

1. A tap for the supply of hot water, of a kind known per se, characterised by the provision of a secondary fluid passage and with an auxiliary valve located in the secondary fluid passage; the secondary fluid passage communicating with the primary fluid passage at a juncture sufficiently close to the tap valve seat that a significant proportion of the fluid flowing under pressure to the opened tap will, when the auxiliary valve is opened, tend to be drawn into the secondary passage and through the auxiliary valve and then either to drain or to a storage facility other than the tap itself.
2. A tap as claimed in Claim 1 wherein said auxiliary valve is selectively manually actuable.
3. A tap as claimed in Claim 1 or Claim 2 wherein said auxiliary valve is automatically actuable in response to the output of a temperature-sensing device.
4. A tap for the supply of hot water substantially as described herein with reference to and as illustrated by any appropriate combination of Figures 2-5.
5. A water supply and/or storage system including one or more taps substantially as described in any of the preceding Claims.



Application No: GB 9601993.0  
Claims searched: 1-5

Examiner: D. Haworth  
Date of search: 21 April 1997

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK CI (Ed.O): E1X (XK7K); F2V (VA4, VV4)  
Int CI (Ed.6): F16K 5/10  
Other: Online database: WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
	None	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.